11. Vicente

Program Name: Vicente.java **Input File: vicente.dat**

Bit parity is a new topic for Vicente and his fellow CS classmates, and they have been given a simple program assignment to take a binary string, determine its current parity, and make it even or odd.

Parity is a way to send data in such as a way that the receiver has some idea if the value sent is in its original form, or if there might be an error due to data corruption during transmission of the signal, perhaps due to a packet collision as is known to happen on some network systems.

A simple way to do parity is to sum all the bits of the original message, decide on either an EVEN or ODD parity, let your receiver know what that parity is, and then ensure that the transmitted data fits that parity criteria.

For example, in a bit string like this one, 10110101, with EVEN parity required, the sum of the bits is 5, which means it currently has ODD parity, and needs to be adjusted. The adjustment process is simply to add a bit to the end of the string, either a zero or a 1, making it the desired parity. In this case a 1 is attached to the end to make the total sum 6 of the bits in string, which ensures EVEN parity.

The assignment is to read two items from a data file, the bit string itself and the parity required, and then adjust the bit string accordingly and then expressing both the original string and the parity adjusted string in hexadecimal form.

The original example above, 10110101, converts to B5 in hex, and the parity adjusted string, 101101011, converts to 16B. The same string with ODD parity results in the hex string 16A.

Input: A bit string and a parity designation, either EVEN or ODD, each on one line with a single space of separation.

Assumption: The original bit string will be of length 8, 16 or 32.

Output: Two uppercased hex values representing the original string and the parity-adjusted string, separated by a single space.

Sample input:

```
10110101 EVEN
10110101 ODD
1000000001110001 ODD
```

Sample output:

```
B5 16B
B5 16A
8071 100E2
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